Supplementary Material

TIMSS vs PISA: What can they tell us about student success? – A comparison of Swedish and Norwegian TIMSS and PISA 2015 results with a focus on school factors.

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# Supplementary Tables

**Table A1.** School variables associated to students’ performance in TIMSS 2015. General models.

|  |  |  |
| --- | --- | --- |
|  | **Norway** | **Sweden** |
|  | Model 1 | Model 2 | Model 1 | Model 2 |
| Constant | 16.073 (3.60) | 13.393 (3.35) | 12.083 (2.18) | 8.361 (3.85) |
| ***Level 1 Factors****Fixed effects* |
| H1 | 0.303 (0.02) | 0.293 (0.02) | 0.353 (0.02) | 0.343 (0.02) |
| H2 | 0.093 (0.02) | 0.093 (0.02) | 0.061 (0.03) | 0.061 (0.03) |
| H3 | 0.143 (0.02) | 0.143 (0.02) | 0.213 (0.03) | 0.203 (0.02) |
| H4 | 0.04 (0.02) | 0.04 (0.02) | 0.02 (0.03) | 0.02 (0.03) |
| ***Level 2 Factors****Fixed effects* |
| aH1 |  | 0.443 (0.12) |  | 0.372 (0.11) |
| aH2 |  |  |  | 0.311 (0.13) |
| S3 | -0.241 (0.11) | -0.221 (0.09) |  |  |
| S6 |  |  | -0.231 (0.10) | -0.18 (0.09) |
| S8 | -0.232 (0.08) |  |  |  |
| S9 |  |  | 0.372 (0.11) |  |
| S10 | 0.402 (0.11) | 0.261 (0.11) |  |  |
| ***Variance Components*** |
| Within-group variance, $σ^{2}$ | 0.86 (0.02) | 0.86 (0.02) | 0.78 (0.02) | 0.80 (0.02) |
| Between-group variance, $ω^{2}$ | 0.70 (0.10) | 0.55 (0.13) | 0.77 (0.10) | 0.56 (0.10) |
| ***Model fit indices*** |
| ICC | 0.08 | 0.08 | 0.15 | 0.16 |
| AIC | 47380.89 | 47365.81 | 37203.84 | 37463.05 |
| BIC | 47444.32 | 47429.24 | 37258.72 | 37524.10 |

3 p-value <0.001, 2 p-value <0.01, 1 p-value <0.05

Model 1 – Full model without aggregated factors; Model 2 - Full model with aggregated factors

aH1 / aH2 = aggregated Books / Home resources, S3 = School resources A, S6 = Teacher’s absenteeism, S8 = Experience of principal, S9 = Parents’ attitudes & activities, S10 = Students’ attitudes & activities

**Table A2.** School variables associated to students’ performance in TIMSS 2015. Models for low and high proficiency levels.

|  |  |  |
| --- | --- | --- |
|  | **Norway** | **Sweden** |
|  | **Low** | **Low** | **High** |
|  | Model 1 | Model 1 | Model 2 | Model 1 | Model 2 |
| Constant | 26.58 (18.13) | 15.343 (3.21) | -10.45 (109.61) | 30.553 (5.50) | 34.823 (6.32) |
| ***Level 1 Factors****Fixed effects* |  |
| H1 | 0.293 (0.04) | 0.203 (0.05) | 0.203 (0.05) | 0.373 (0.02) | 0.373 (0.02) |
| H2 | 0.092 (0.04) | 0.06 (0.09) | 0.05 (0.09) | 0.06 (0.03) | 0.03 (0.03) |
| H3 | 0.163 (0.05) | 0.283 (0.05) | 0.283 (0.05) | 0.163 (0.03) | 0.153 (0.03) |
| H4 | 0.05 (0.05) | -0.03 (0.06) | -0.02 (0.06) | -0.01 (0.04) | 0.01 (0.03) |
| ***Level 2 Factors****Fixed effects* |  |
| aH1 |  |  |  |  | 0.321 (0.16) |
| aH2 |  |  | 0.492 (0.15) |  |  |
| S3 | -0.641 (0.29) |  |  |  |  |
| S4 |  |  |  | 0.371 (0.15) |  |
| S5 |  |  |  | -0.492 (0.17) | -0.371 (0.16) |
| S7 |  |  | 0.291 (0.15) |  |  |
| S10 | 0.751 (0.30) | -0.873 (0.04) |  |  |  |
| ***Variance Components*** |  |
| Within-group variance, $σ^{2}$ | 0.86 (0.03) | 0.83 (0.04) | 0.83 (0.03) | 0.80 (0.02) |  |
| Between-group variance, $ω^{2}$ | 0.20 (0.51) | 0.23 (0.17) | 0.63 (0.19) | 0.65 (0.18) |  |
| ***Model fit indices*** |  |
| ICC | 0.03 | 0.15 | 0.14 | 0.04 | 0.04 |
| AIC | 10794.09 | 5076.25 | 5091.29 | 22708.32 | 26885.93 |
| BIC | 10837.76 | 5108.89 | 5128.01 | 22758.85 | 26937.99 |

3 p-value <0.001, 2 p-value <0.01, 1 p-value <0.05

Model 1 – Full model without aggregated factors; Model 2 - Full model with aggregated factors

aH1 / aH2 = aggregated Books / Home resources, S3 = School resources A, S4 = School resources B, S5 = School resources C, S7 = Days per year, S10 = Students’ attitudes & activities.

**Table A3.** School variables associated to students’ performance in PISA 2015. General models.

|  |  |  |
| --- | --- | --- |
|  | **Norway** | **Sweden** |
|  | Model 1 | Model 2 | Model 1 | Model 2 |
| Constant | 16.473 (1.66) | 11.983 (1.33) | 15.123 (1.11) | 11.453 (1.50) |
| ***Level 1 Factors****Fixed effects* |
| H1 | 0.333 (0.02) | 0.313 (0.02) | 0.343 (0.01) | 0.313 (0.01) |
| H2 | -0.051 (0.02) | -0.051 (0.02) | -0.063 (0.01) | -0.053 (0.01) |
| H3 | 0.143 (0.02) | 0.133 (0.02) | 0.183 (0.02) | 0.183 (0.02) |
| H4 | 0.052 (0.02) | 0.062 (0.02) | 0.042 (0.02) | 0.042 (0.02) |
| ***Level 2 Factors****Fixed effects* |
| aH1 |  | 0.583 (0.06) |  |  0.743 (0.05) |
| aH2 |  |  |  |  -0.141 (0.07) |
| aH4 |  |  |  |  -0.151 (0.06) |
| S1 |  |  | -0.232 (0.08) | -0.11 (0.06) |
| S2 | 0.302 (0.10) | 0.202 (0.08) |  |  |
| S5 | 0.171 (0.09) |  |  |  |
| S11 |  |  | 0.151 (0.06) |  |
| S12 |  |  | -0.191 (0.08) |  |
| ***Variance Components*** |
| Within-group variance, $σ^{2}$ | 0.85 (0.01) | 0.87 (0.01) | 0.82 (0.01) | 0.85 (0.01) |
| Between-group variance, $ω^{2}$ | 0.87 (0.07) | 0.58 (0.08) | 0.88 (0.06) | 0.39 (0.06) |
| ***Model fit indices*** |
| ICC | 0.06 | 0.08 | 0.08 | 0.14 |
| AIC | 51792.25 | 54678.79 | 59227.46 | 61911.60 |
| BIC | 51849.75 | 54736.78 | 59292.67 | 61948.88 |

3 p-value <0.001, 2 p-value <0.01, 1 p-value <0.05

Model 1 – Full model without aggregated factors; Model 2 - Full model with aggregated factors

aH1 / aH2 / aH4 = aggregated Books / Home resources / Occurrence of boys, S1 = Discipline of students, S2 = School location, S5 = School resources C, S11 = Evaluation, S12 = Leading/promotion.

**Table A4.** School variables associated to students’ performance in PISA 2015. Models for low and high proficiency levels.

|  |  |  |
| --- | --- | --- |
|  | **Norway** | **Sweden** |
|  | **Low** | **High** |
|  | Model 1 | Model 1 | Model 2 |
| Constant | 34.122 (13.03) | 34.812 (10.08) | 25.373 (5.90) |
| ***Level 1 Factors****Fixed effects* |
| H1 | 0.273 (0.04) | 0.363 (0.02) | 0.343 (0.02) |
| H2 | -0.03 (0.04) | -0.05 (0.03) | -0.05 (0.03) |
| H3 | 0.142 (0.04) | 0.123 (0.03) | 0.123 (0.03) |
| H4 | 0.02 (0.04) | 0.061 (0.02) | 0.072 (0.02) |
| ***Level 2 Factors****Fixed effects* |
| aH1 |  |  |  0.683 (0.12) |
| aH4 |  |  | -0.321 (0.02) |
| S1 |  | -0.27 (0.23) |  |
| S13 | -0.26 (0.14) |  |  |
| S14 |  | -0.511 (0.25) |  |
| S15 | 0.943 (0.24) |  |  |
| ***Variance Components*** |
| Within-group variance, $σ^{2}$ | 0.89 (0.02) | 0.84 (0.02) | 0.86 (0.02) |
| Between-group variance, $ω^{2}$ | 0.00 (0.50) | 0.68 (0.27) | 0.23 (0.16) |
| ***Model fit indices*** |
| ICC | 0.02 | 0.02 | 0.04 |
| AIC | 11345.15 | 18922.39 | 18919.83 |
| BIC | 11389.01 | 18970.90 | 18968.34 |

3 p-value <0.001, 2 p-value <0.01, 1 p-value <0.05

Model 1 – Full model without aggregated factors; Model 2 - Full model with aggregated factors

aH1 / aH4 = aggregated Books / Occurrence of boys, S13 = School participation 1, S14 = School participation 2, S15 = Special students – language.